BIRCH, STEWART, KOLASCH & BIRCH, LLP

INTELLECTUAL PROPERTY LAW
8110 GATEHOUSE ROAD
SUITE 500 EAST
FALLS CHURCH, VA 22042-1210
U S A
(703) 205-8000

FAX: (703) 205-8050
(703) 698-8590 (G IV)

e-mail. mailroom@bskb com
web: http://www.bskb.com

TERRELL C BIRCH
RAYMOND C. STEWART
JOSEPH A KOLASCH
JAMES M SLATTERY
BERNARD L. SWEENEY*
MICHAEL K MUTTER
CHARLES GORENSTEIN
GERALD M MURPHY, JR.
LEONARD R SVENSSON
TERRY L CLARK
ANDREW D. MEIKLE
MARC S. WEINER
JOE McKINNEY MUNCY
ROBERT J KENNEY
DONALD J DALEY
JOHN W BAILEY
JOHN A. CASTELLANO, III

OF COUNSEL
HERBERT M BIRCH (1905-1996)
ELLIOT A GOLDBERG*
WILLIAM L. GATES*
EDWARD H. VALANCE
RUPERT J BRADY (RET)*

*ADMITTED TO A BAR OTHER THAN VA

GARY D YACURA
THOMAS S. AUCHTERLONIE
MICHAEL R CAMMARATA
JAMES T ELLER, JR
SCOTT L LOWE
MARY ANN CAPRIA
MARK J NUELL, Ph D
DARIN E BARTHOLOMEW*
D RICHARD ANDERSON
PAUL C LEWIS
W. KARL RENNER
MARK W MILSTEAD
JOHN CAMPA

REG PATENT AGENTS
FREDERICK R HANDREN
ANDREW J TELESZ, JR
MARYANNE LIOTTA, Ph D
MAKI HATSUMI
MIKE S RYU
CRAIG A McROBBIE
GARTH M DAHLEN, Ph D
LAURA C LUTZ
ROBERT E GOOZNER, Ph D
HYUNG N SOHN
MATTHEW J. LATTIG
ALAN PEDERSEN-GILES

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Assistant Commissioner for Patents
Box PATENT APPLICATION
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Sir:

Transmitted herewith for filing is the patent application of

Inventor(s):   NAKAJIMA, Nobuyoshi

For: IMAGE PROCESSING METHOD AND APPARATUS

Enclosed are:

<u>X</u>   A specification consisting of <u>19</u> pages

<u>X</u>   <u>4</u>   sheet(s) of <u>formal</u>   drawings

<u>X</u>   An assignment of the invention

<u>X</u>   Certified copy of Priority Document(s)

<u>X</u>   Executed Declaration   <u>X</u> Original   ___ Photocopy

___   A verified statement to establish small entity status under 37 CFR 1.9 and 37 CFR 1.27

___   Preliminary Amendment

___   Information Disclosure Statement, PTO-1449 and reference(s)

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Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By_____
DONALD J. DALEY
Reg. No. 34,313
P. O. Box 747
Falls Church, Virginia 22040-0747

(703) 205-8000
DJD/djm

IMAGE PROCESSING METHOD AND APPARATUS

BACKGROUND OF THE INVENTION

Field of the Invention

5   This invention relates to an image processing method and apparatus for laying out person images, which have been obtained by photographing a plurality of persons, and forming a layout image, such as a school photo. This invention also relates to a recording medium, on which a program for causing

10   a computer to execute the image processing method has been recorded and from which the computer is capable of reading the program.

Description of the Prior Art

Album prints, typically school photos, are formed

15   by laying out person images, which have been obtained by photographing persons, in predetermined layouts, thus obtaining layout images, and printing the layout images. As illustrated in Figure 5, if the person images are merely laid out in a layout image comprising the person images, positions

20   and/or sizes of face patterns of the persons will vary for different person images, and the layout image will become unsightly. Therefore, it may be considered to take photographs such that the positions and/or the sizes of the face patterns of the persons in the photographs may be uniform. However, in

25   cases where photographs of a plurality of persons are taken,

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considerable time and labor are required to take the photographs by changing the position of the camera in accordance with the heights of the persons and/or the sizes of the faces of the persons. Also, the position of the camera with respect to the persons varies for different cameramen and different dates of photographing. Accordingly, it is difficult to take the photographs such that the positions and/or the sizes of the face patterns of the persons in all of the photographs may be uniform.

Therefore, in cases where a layout image is to be formed, when operations for printing from sheets of negative film, on which person images have been recorded, are performed, the positions of the sheets of negative film and/or the positions of photosensitive materials have heretofore been adjusted such that the positions and/or the sizes of the face patterns of the persons may be uniform among the images. Alternatively, a layout image has heretofore been formed by laying out person images, which have been obtained by performing a trimming process such that the positions and/or the sizes of the face patterns of the persons may be uniform. As another alternative, a layout image has heretofore been formed by printing person images to a comparatively large size, arraying the prints of the person images such that the positions of the face patterns of the persons may be approximately uniform, and again performing the photographing operation.

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However, with the technique for forming a layout image by adjusting the positions of the sheets of negative film and/or the positions of the photosensitive materials and performing the printing operations, and with the technique for forming a layout image by arraying the printed images again performing the photographing operation, the efficiency of the layout image formation and the productivity of the layout images cannot be kept high.

SUMMARY OF THE INVENTION

The primary object of the present invention is to provide an image processing method, wherein a layout image, such as a school photo, is capable of being formed efficiently.

Another object of the present invention is to provide an apparatus for carrying out the image processing method.

The specific object of the present invention is to provide a recording medium, on which a program for causing a computer to execute the image processing method has been recorded and from which the computer is capable of reading the program.

The present invention provides an image processing method for obtaining a layout image signal representing a layout image, in which a plurality of person images are laid out, from a plurality of original image signals, each of the original image signals representing a person image, in which a face pattern of a person is embedded, the method comprising the steps

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of:

    i) detecting face information from each of the original image signals, the face information representing a position and/or a size of the face pattern of the person in the person image represented by each original image signal,

    ii) performing a face pattern normalizing process on each of the original image signals and in accordance with the detected face information, a plurality of normalized image signals being obtained from the face pattern normalizing process, and

    iii) laying out a plurality of images, which are represented by the normalized image signals, in a predetermined layout, whereby the layout image signal representing the thus formed layout image is obtained.

    The term "face information" as used herein means, for example, the information representing a displacement quantity for transformation of a person image such that the position of the face pattern in the person image may coincide with a position in a predetermined reference image or a predetermined coordinate position. Also, the term "face pattern normalizing process" as used herein means a process for transforming the original image signal with an affine transformation technique, or the like, such that the positions and/or the sizes of the face patterns of the persons may become uniform among the person images.

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The present invention also provides an image processing apparatus for obtaining a layout image signal representing a layout image, in which a plurality of person images are laid out, from a plurality of original image signals, each of the original image signals representing a person image, in which a face pattern of a person is embedded, the apparatus comprising:

i) detection means for detecting face information from each of the original image signals, the face information representing a position and/or a size of the face pattern of the person in the person image represented by each original image signal,

ii) normalization means for performing a face pattern normalizing process on each of the original image signals and in accordance with the detected face information, a plurality of normalized image signals being obtained from the face pattern normalizing process, and

iii) editing means for laying out a plurality of images, which are represented by the normalized image signals, in a predetermined layout, and obtaining the layout image signal representing the thus formed layout image.

The present invention further provides a recording medium, on which a program for causing a computer to execute the image processing method in accordance with the present invention has been recorded and from which the computer is

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capable of reading the program.

With the image processing method and apparatus in accordance with the present invention, the face patterns of the persons in the person images are normalized, and the

5   normalized image signals are thereby obtained. The images, which are represented by the normalized image signals, are laid out in the predetermined layout, and the layout image signal representing the thus formed layout image is obtained. Therefore, in the layout image reproduced from the layout image

10   signal, the positions and/or the sizes of the face patterns of the persons become uniform. Accordingly, the layout image, in which the positions and/or the sizes of the face patterns of the persons are uniform, can be formed efficiently. As a result, the productivity of layout images, such as school photos,

15   can be enhanced.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a block diagram showing an album printing system, in which an embodiment of the image processing apparatus in accordance with the present invention is employed,

20   Figure 2 is an explanatory view showing a person image,

Figure 3 is a flow chart showing how the embodiment of the image processing apparatus in accordance with the present invention operates,

25   Figure 4 is a schematic view showing a layout image,

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in which a plurality of person images have been normalized,

Figure 5 is a schematic view showing a layout image, in which a plurality of person images have not been normalized, and

5   Figure 6 is a schematic view showing layout images obtained with a different embodiment of the image processing apparatus in accordance with the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present invention will hereinbelow be described

10   in further detail with reference to the accompanying drawings.

Figure 1 is a block diagram showing an album printing system, in which an embodiment of the image processing apparatus in accordance with the present invention is employed. With reference to Figure 1, the album printing system comprises

15   reading means 1 for reading out a plurality of original image signals S0, S0, ..., each of which represents a person image. The album printing system also comprises detection means 2 for detecting face information H from each of the original image signals S0, S0, ... having been received from the reading means

20   1. The face information H represents a displacement quantity, which is to be utilized in a face pattern normalizing process for uniformizing the positions and/or the sizes of face patterns in the person images. The album printing system further comprises normalization means 3 for performing affine

25   transformation on each of the original image signals S0, S0, ...

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and in accordance with the corresponding face information H, and thereby obtaining a plurality of normalized image signals S1, S1, ... representing images, in which the positions and/or the sizes of the face patterns of the persons have been normalized. The album printing system still further comprises editing means 4 for laying out the images, which are represented by the normalized image signals S1, S1, ..., in a predetermined layout, and obtaining a layout image signal S2 representing a layout image R, in which the plurality of the person images have been laid out. The album printing system also comprises a printer 5 for reproducing the layout image R from the layout image signal S2.

The original image signals S0, S0, ... may be obtained from a read-out apparatus, such as a scanner, which reads out the person images from negative film or positive film. Alternatively, the original image signals S0, S0, ... may be obtained from image sensing operations performed by a digital camera. The thus obtained original image signals S0, S0, ... are stored on a storage medium or a storage device. The reading means 1 reads the original image signals S0, S0, ... from the storage medium or the storage device.

The detection means 2 comprises edge detecting means 6 for detecting edges in the face pattern embedded in the person image, which is represented by each original image signal S0. The detection means 2 also comprises binarization means 7 for

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binarizing the original image signal S0, which has been obtained

from the edge detection, and obtaining a binary signal S0'.

The detection means 2 further comprises pattern matching means

8. The pattern matching means 8 performs a pattern matching

process on the binary signal S0' and a reference signal G, which

represents a predetermined binary reference image. The

pattern matching means 8 thus detects at least two points, at

which the degree of correlation between the person image and

the reference image is highest. Also, the pattern matching

means 8 determines displacement quantities, which are to be

utilized for transforming a center position having coordinates

(x, y) in the face pattern embedded in the person image as

illustrated in Figure 2 into a center position having

coordinates (x0, y0) in the reference image, and uniformizing

a size v of the face pattern in the vertical direction and a

size h of the face pattern in the horizontal direction. The

detection means 2 feeds information, which represents the thus

determined displacement quantities, as the face information

H into the normalization means 3. The reference image

represents a contour image of a face having a predetermined

size, which contour image is located such that it may have the

center position at the predetermined coordinates (x0, y0).

In accordance with the face information H received

from the detection means 2, the normalization means 3 performs

affine transformation on the original image signal S0 and

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obtains a normalized image signal S1. The affine

transformation is performed with Formula (1) shown below.

$$\begin{pmatrix} x2 \\ y2 \end{pmatrix} = \begin{pmatrix} a & b \\ -b & a \end{pmatrix} \cdot \begin{pmatrix} x1 \\ y1 \end{pmatrix} + \begin{pmatrix} c \\ d \end{pmatrix} \qquad (1)$$

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in which (x1, y1) represents the coordinate values of the person

image before being transformed, and (x2, y2) represents the

coordinate values of the person image after being transformed.

10   With the coordinate transformation performed with

Formula (1), all of the image size enlargement or reduction

of the person image represented by the original image signal

S0, the rotation of the entire person image, and the parallel

translation of the person image are achieved simultaneously.

15   The coefficients a, b, c, and d in Formula (1) are

determined in the manner described below. Specifically,

Formula (1) can be divided into Formulas (2) and (3) shown below.

$$x2=ax1+by1+c \qquad\qquad (2)$$

$$y2=-bx1+ay1+d \qquad\qquad (3)$$

20 The two points in the person image, which are detected by the

pattern matching process as the points having the highest degree

of correlation with the reference image, may have coordinates

(x11, y11) and coordinates (x12, y12). Also, the two points

in the reference image, which correspond to the two points in

25   the person image, may have coordinates (x21, y21) and

10

coordinates (x22, y22). In such cases, Formulas (4), (5), (6), and (7) shown below obtain.

$$x21 = ax11 + by11 + c \qquad (4)$$

$$x22 = ax12 + by12 + c \qquad (5)$$

$$y21 = -bx11 + ay11 + d \qquad (6)$$

$$y22 = -bx12 + ay12 + d \qquad (7)$$

The four coefficients a, b, c, and d can be calculated by solving Formulas (4), (5), (6), and (7).

How this embodiment operates will be described hereinbelow. Figure 3 is a flow chart showing how the embodiment of the image processing apparatus in accordance with the present invention operates.

With reference to Figure 3, firstly, in a step S1, the reading means 1 reads the original image signals S0, S0, ... from the storage medium or the storage device. In a step S2, each of the original image signals S0, S0, ... is fed into the detection means 2. In a step S3, the edge detecting means 6 of the detection means 2 performs a differentiation process, or the like, on the original image signal S0 and detects edges in the person image represented by the original image signal S0. In a step S4, the binarization means 7 performs a binarizing process on the original image signal S0, which has been obtained from the edge detection, the binary signal S0' is obtained from the binarizing process. Thereafter, in a step S5, the pattern matching means 8 calculates the displacement quantities, which

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are to be utilized for transforming the center position having

the coordinates (x, y) in the face pattern embedded in the person

image into the center position having the coordinates (x0, y0)

in the reference image, and uniformizing the size v of the face

5   pattern in the vertical direction and the size h of the face

pattern in the horizontal direction. The information, which

represents the calculated displacement quantities, is fed as

the face information H into the normalization means 3.

In a step S6, the normalization means 3 calculates

10   the affine transformation coefficients with Formula (1) and

in accordance with the face information H, performs the affine

transformation on the original image signal S0, and obtains

the normalized image signal S1 representing the image, in which

the position and/or the size of the face pattern of the person

15   has been normalized. In a step S7, a judgment is made as to

whether all of the original image signals S0, S0, ... having

been read by the reading means 1 have been or have not been

normalized. In cases where it has been judged that all of the

original image signals S0, S0, ... have not been normalized,

20   the processes from the step S2 to the step S6 are iterated.

In cases where it has been judged that all of the original image

signals S0, S0, ... have been normalized, in a step S8, the

editing means 4 lays out the images, which are represented by

the normalized image signals S1, S1, ..., in a predetermined

25   layout and obtains the layout image signal S2 representing the

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layout image R. Thereafter, in a step S9, the printer 5 prints
the layout image R in accordance with the layout image signal
S2.

In this manner, with this embodiment, the process

5   for normalizing the face patterns of the persons in the person
images is performed on the original image signals S0, S0, ...
representing the person images, and the normalized image
signals S1, S1, ... are thereby obtained. The images, which
are represented by the normalized image signals S1, S1, ...,

10   are laid out in the predetermined layout, and the layout image
signal S2 representing the thus formed layout image is obtained.
Therefore, as illustrated in Figure 4, in the layout image R
reproduced from the layout image signal S2, the positions and/or
the sizes of the face patterns of the persons become uniform.

15   Accordingly, the layout image R, in which the positions and/or
the sizes of the face patterns of the persons are uniform, can
be formed efficiently. As a result, the productivity of layout
images R, R, ..., such as school photos, can be enhanced.

In the embodiment described above, the detection

20   means 2 detects at least two points having the highest degree
of correlation by performing the pattern matching process and
calculates the affine transformation coefficients a, b, c, and
d to be utilized for the normalization of the position and/or
the size of the face pattern of the person in the person image.

25   In cases where only the position of the face pattern of the

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person in the person image is to be compensated for, only one point having the highest correlation may be detected, and the position of the face pattern may be uniformized in accordance with the detected point. In this manner, the normalization of

5   the face pattern can be performed quickly.

Also, in the embodiment described above, the detection means 2 detects the edges in the person image, performs the pattern matching with the reference image, and thereby calculates the displacement quantities.

10   Alternatively, the displacement quantities may be calculated with a technique described in, for example, Japanese Unexamined Patent Publication No. 6(1994)-67320. Specifically, the person image may be divided into a plurality of regions in accordance with the distributions of the hue and saturation

15   values in the person image, and a face candidate region may be detected. A face region may then be detected in accordance with the shape of a neighboring region, which is located in the vicinity of the face candidate region. Thereafter, the pattern matching process as described above may be performed

20   on the signal representing the face region, and the displacement quantities may thereby be calculated. As another alternative, an ellipse circumscribed about a simply detected face candidate region may be formed, and the displacement quantities with respect to the reference image may be calculated by taking the

25   center point of the ellipse as the center position of the face

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pattern having the coordinates (x, y). The face region may be

detected with one of various other techniques. For example,

the face region may be detected by utilizing neural network

techniques described in, for example, Japanese Unexamined

5   Patent Publication Nos. 5(1993)-274438 and 5(1993)-307605.

Further, in the aforesaid embodiment, the layout

image R is formed by normalizing the face patterns of a plurality

of different persons. Alternatively, as illustrated in Figure

6, an album may be formed by combining a plurality of layout

10   images, each of which comprises a plurality of images of the

same person. In such cases, the image processing apparatus in

accordance with the present invention can be utilized for

normalizing the positions and/or the sizes of the face patterns,

which are embedded in the images constituting each layout image.

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What is claimed is:

1. An image processing method for obtaining a layout image signal representing a layout image, in which a plurality of person images are laid out, from a plurality of original image signals, each of the original image signals representing a person image, in which a face pattern of a person is embedded, the method comprising the steps of:

i) detecting face information from each of the original image signals, said face information representing a position and/or a size of the face pattern of the person in the person image represented by each original image signal,

ii) performing a face pattern normalizing process on each of the original image signals and in accordance with said detected face information, a plurality of normalized image signals being obtained from said face pattern normalizing process, and

iii) laying out a plurality of images, which are represented by said normalized image signals, in a predetermined layout, whereby the layout image signal representing the thus formed layout image is obtained.

2. A method as defined in Claim 1 wherein said face pattern normalizing process is performed by utilizing affine transformation.

3. An image processing apparatus for obtaining a layout image signal representing a layout image, in which a

plurality of person images are laid out, from a plurality of

original image signals, each of the original image signals

representing a person image, in which a face pattern of a person

is embedded, the apparatus comprising:

5   i) detection means for detecting face information

from each of the original image signals, said face information

representing a position and/or a size of the face pattern of

the person in the person image represented by each original

image signal,

10   ii) normalization means for performing a face

pattern normalizing process on each of the original image

signals and in accordance with said detected face information,

a plurality of normalized image signals being obtained from

said face pattern normalizing process, and

15   iii) editing means for laying out a plurality of

images, which are represented by said normalized image signals,

in a predetermined layout, and obtaining the layout image signal

representing the thus formed layout image.

4. An apparatus as defined in Claim 3 wherein said

20 face pattern normalizing process is performed by utilizing

affine transformation.

5. A recording medium, on which a program for causing

a computer to execute an image processing method has been

recorded and from which the computer is capable of reading the

25 program, the image processing method comprising obtaining a

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layout image signal representing a layout image, in which a plurality of person images are laid out, from a plurality of original image signals, each of the original image signals representing a person image, in which a face pattern of a person is embedded,

wherein the program comprises the procedures of:

i) detecting face information from each of the original image signals, said face information representing a position and/or a size of the face pattern of the person in the person image represented by each original image signal,

ii) performing a face pattern normalizing process on each of the original image signals and in accordance with said detected face information, a plurality of normalized image signals being obtained from said face pattern normalizing process, and

iii) laying out a plurality of images, which are represented by said normalized image signals, in a predetermined layout, whereby the layout image signal representing the thus formed layout image is obtained.

6. A recording medium as defined in Claim 5 wherein said face pattern normalizing process is performed by utilizing affine transformation.

ABSTRACT OF THE DISCLOSURE

Face information is detected from each of original image signals, each of the original image signals representing a person image, in which a face pattern of a person is embedded. The face information represents a position and/or a size of the face pattern of the person in the person image represented by each original image signal. A face pattern normalizing process is performed on each of the original image signals and in accordance with the detected face information, and a plurality of normalized image signals are obtained from the face pattern normalizing process. A plurality of images, which are represented by the normalized image signals, are laid out in a predetermined layout, and a layout image signal representing the thus formed layout image is obtained. A layout image, such as a school photo, is thus capable of being formed efficiently.
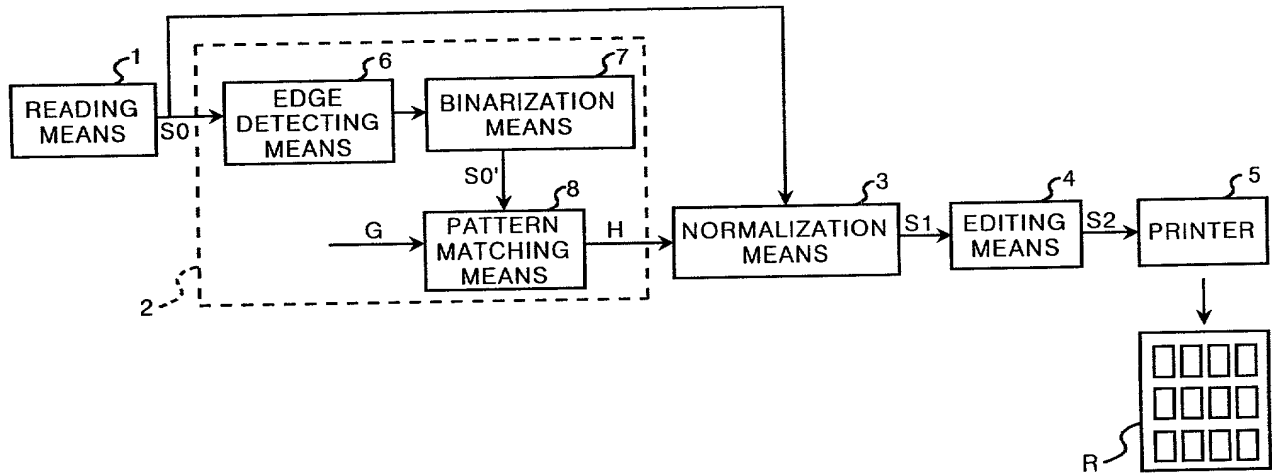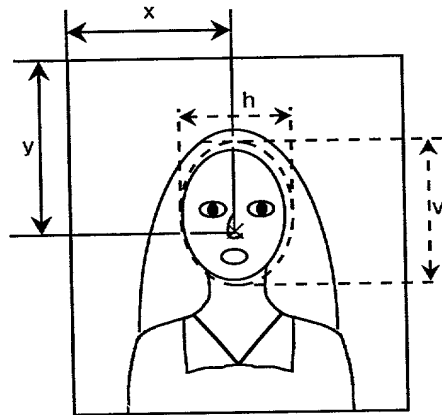
19

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                                    ┌─────────────────────────────────────────┐
                                    │                                         │
┌──────────┐    ┌─────6─────┐  ┌───────7────┐    │                                         │
│ READING  │    │   EDGE     │  │BINARIZATION│    │                                         │
│  MEANS   │    │ DETECTING  │─→│   MEANS    │    │                                         │
│    1     │ S0 │   MEANS    │  │            │    │                                         │
└──────────┘  ┌─│            │  └────────────┘    │                                         │
              │ └────────────┘       │ S0'        ▼                                         │
              │               ┌──────8──────┐  ┌────3────┐  ┌───4────┐   ┌────5────┐
              │   G ────────→  │  PATTERN    │ H│NORMALIZA│S1│EDITING │S2 │PRINTER  │
              │               │  MATCHING   │─→│  TION   │─→│ MEANS  │─→ │         │
              │               │   MEANS     │  │  MEANS  │  │        │   └─────────┘
              │               └─────────────┘  └─────────┘  └────────┘
              2
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FIG.1

FIG.2

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                    ┌─────────────┐
                    │    START    │
                    └──────┬──────┘
                           │         S1
                    ┌──────▼──────┐
                    │ READ THE IMAGE │
                    │   SIGNALS   │
                    └──────┬──────┘
                           │         S2
                    ┌──────▼──────┐
                    │ FEED EACH IMAGE │
                    │ SIGNAL INTO THE │
                    │ DETECTION MEANS │
                    └──────┬──────┘
          ┌────────────────►│         S3
          │         ┌──────▼──────┐
          │         │ DETECT EDGES │
          │         └──────┬──────┘
          │                │         S4
          │         ┌──────▼──────┐
          │         │   PERFORM   │
          │         │ BINARIZATION │
          │         └──────┬──────┘
          │                │         S5
          │         ┌──────▼──────┐
          │         │ CALCULATE FACE │
          │         │ INFORMATION  │
          │         └──────┬──────┘
          │                │         S6
          │         ┌──────▼──────┐
          │         │   PERFORM   │
          │         │ NORMALIZATION │
          │         └──────┬──────┘
          │                │         S7
          │        ╱────────▼────────╲
     NO   │       │  HAVE ALL IMAGE   │
          └───────│  SIGNALS BEEN     │
                  │   NORMALIZED      │
                   ╲────────┬────────╱
                        YES │         S8
                    ┌──────▼──────┐
                    │ LAY OUT THE │
                    │   IMAGES    │
                    └──────┬──────┘
                           │         S9
                    ┌──────▼──────┐
                    │  PRINT THE  │
                    │ LAYOUT IMAGE │
                    └──────┬──────┘
                           │
                    ┌──────▼──────┐
                    │     END     │
                    └─────────────┘
```
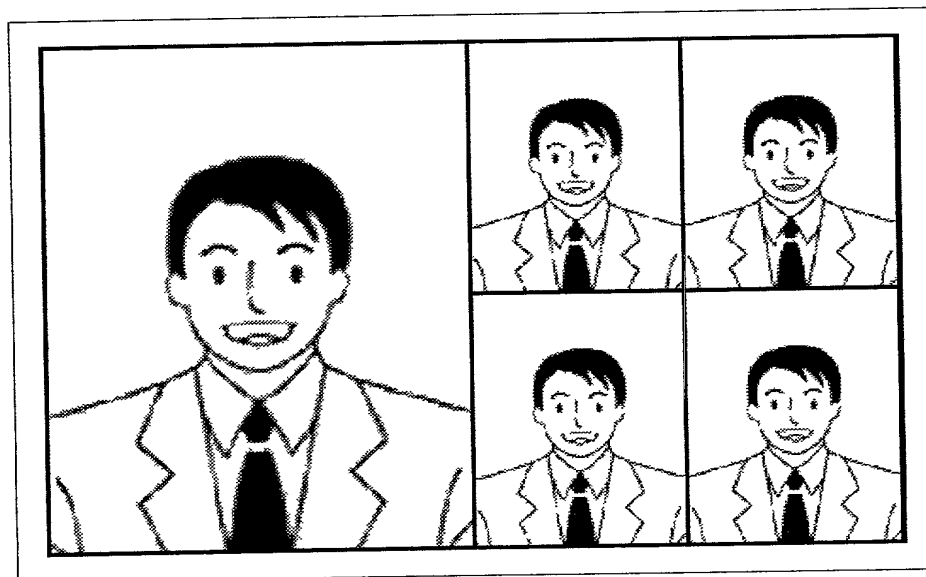
FIG.3

FIG. 4

FIG. 5

FIG. 6

Declaration and Power of Attorney For Patent Application

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特許出願宣言書及び委任状

Japanese Language Declaration

日本語宣言書

下記の氏名の発明者として、私は以下の通り宣言します。

As a below named inventor, I hereby declare that:

Nobuyoshi Nakajima

私の住所、私書箱、国籍は下記の私の氏名の後に記載された通りです。

My residence, post office address and citizenship are as stated next to my name. c/o Fuji Photo Film Co., Ltd., 798 Miyanodai, Kaisei-machi, Ashigarakami-gun, Kanagawa-ken, Japan

下記の名称の発明に関して請求範囲に記載され、特許出願している発明内容について、私が最初かつ唯一の発明者（下記の氏名が一つの場合）もしくは最初かつ共同発明者であると（下記の名称が複数の場合）信じています。

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

"IMAGE PROCESSING METHOD AND

APPARATUS"

上記発明の明細書（下記の欄でx印がついていない場合は、本書に添付）は、

the specification of which is attached hereto unless the following box is checked:

☐ ＿月＿日に提出され、米国出願番号または特許協定条約国際出願番号を＿＿＿＿＿とし、（該当する場合）＿＿＿＿＿に訂正されました。

☐ **was filed on** ＿＿＿＿＿＿＿＿＿＿＿
as United States Application Number or
PCT International Application Number
＿＿＿＿＿＿＿＿ **and was amended on**
＿＿＿＿＿＿＿＿ **(if applicable).**

私は、特許請求範囲を含む上記訂正後の明細書を検討し、内容を理解していることをここに表明します。

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

私は、連邦規則法典第３７編第１条５６項に定義されるとおり、特許資格の有無について重要な情報を開示する義務があることを認めます。

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

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（日本語宣言書）

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私は、米国法典第３５編１１９条 (a)‐(d) 項又は３６５条 (b) 項に基き下記の、米国以外の国の少なくとも一ヵ国を指定している特許協力条約３６５ (a) 項に基づく国際出願、又は外国での特許出願もしくは発明者証の出願についての外国優先権をここに主張するとともに、優先権を主張している、本出願の前に出願された特許または発明者証の外国出願を以下に、枠内をマークすることで、示しています。

I hereby claim foreign priority under Title 35, United States Code, Section 119 (a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application(s)
外国での先行出願

Priority Not Claimed
優先権主張なし

(patent) 336998/1998	Japan	27/11/1998	☐
(Number) （番号）	(Country) （国名）	(Day/Month/Year Filed) （出願年月日）	
(Number) （番号）	(Country) （国名）	(Day/Month/Year Filed) （出願年月日）	☐

私は、第３５編米国法典１１９条 (e) 項に基いて下記の米国特許出願規定に記載された権利をここに主張いたします。

I hereby claim the benefit under Title 35, United States Code, Section 119(e) of any United States provisional application(s) listed below.

(Application No.) （出願番号）	(Filing Date) （出願日）	(Application No.) （出願番号）	(Filing Date) （出願日）

私は、下記の米国法典第３５編１２０条に基いて下記の米国特許出願に記載された権利、又は米国を指定している特許協力条約３６５条 (c) に基ずく権利をここに主張します。また、本出願の各請求範囲の内容が米国法典第３５編１１２条第１項又は特許協力条約で規定された方法で先行する米国特許出願に開示されていない限り、その先行米国出願書提出日以降で本出願書の日本国内または特許協力条約国際提出日までの期間中に入手された、連邦規則法典第３７編１条５６項で定義された特許資格の有無に関する重要な情報について開示義務があることを認識しています。

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s), or 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code Section 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of application.

(Application No.) （出願番号）	(Filing Date) （出願日）	(Status: Patented, Pending, Abandoned) （現況 ： 特許許可済、係属中、放棄済）
(Application No.) （出願番号）	(Filing Date) （出願日）	(Status: Patented, Pending, Abandoned) （現況 ： 特許許可済、係属中、放棄済）

私は、私自身の知識に基ずいて本宣言書中で私が行なう表明が真実であり、かつ私の入手した情報と私の信じるところに基ずく表明が全て真実であると信じていること、さらに故意になされた虚偽の表明及びそれと同等の行為は米国法典第１８編第１００１条に基ずき、罰金または拘禁、もしくはその両方により処罰されること、そしてそのような故意による虚偽の声明を行なえば、出願した、又は既に許可された特許の有効性が失われることを認識し、よってここに上記のごとく宣誓を致します。

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Japanese Language Declaration
(日本語宣言書)

2091-205P

委任状： 私は下記の発明者として、本出願に関する一切の手続きを米特許商標局に対して遂行する弁理士または代理人として、下記の者を指名いたします。（弁護士、または代理人の氏名及び登録番号を明記のこと）

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith *(list name and registration number)*

TERRELL C. BIRCH (Reg. No. 19,382)
RAYMOND C. STEWART (Reg. No. 21,066)
JOSEPH A. KOLASCH (Reg. No. 22,463)
ANTHONY L. BIRCH (Reg. No. 26,122)

JAMES M. SLATTERY (Reg. No. 28,380)
BERNARD L. SWEENEY (Reg. No. 24,448)
MICHAEL K. MUTTER (Reg. No. 29,680)
CHARLES GORENSTEIN (Reg. No. 29,271)

GERALD M. MURPHY (Reg. No. 28,977)
LEONARD R. SVENSSON (Reg. No. 30,330)
TERRY L. CLARK (Reg. No. 32,644)
ANDREW D. MEIKLE (Reg. No. 32,868)

MARC S. WEINER (Reg. No. 32,181)
ANDREW F. REISH (Reg. No. 33,443)
JOE M. MUNCY (Reg. No. 32,334)
C. JOSEPH FARACI (Reg. No. 32,350)

書類送付先

Send Correspondence to:

BIRCH, STEWART, KOLASCH & BIRCH, LLP
P.O. BOX 747
FALLS CHURCH, VA 22040-0747
TEL: (703) 205-8000

直接電話連絡先： （名前及び電話番号）

Direct Telephone Calls to: *(name and telephone number)*

BIRCH, STEWART, KOLASCH & BIRCH, LLP
TEL: (703) 205-8000

唯一または第一発明者名	Full name of sole or first inventor Nobuyoshi Nakajima
発明者の署名　　　　　　日付	Inventor's signature _Nobuyoshi Nakajima_　　Date November 16, 1999
住所	Residence Kaisei-machi, Japan
国籍	Citizenship Japan
私書箱	Post Office Address c/o Fuji Photo Film Co., Ltd., 798 Miyanodai, Kaisei-machi, Ashigarakami-gun, Kanagawa-ken, Japan
第二共同発明者	Full name of second joint inventor, if any
第二共同発明者　　　　　日付	Second inventor's signature　　Date
住所	Residence
国籍	Citizenship
私書箱	Post Office Address

（第三以降の共同発明者についても同様に記載し、署名をすること）

(Supply similar information and signature for third and subsequent joint inventors.)